

IN THE CLAIMS:

Claims 1 through 26 and 28 through 72 were previously cancelled. Claims 27, 73, 79, 81, 82 and 83 have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

1.-26. (Cancelled)

27. (Currently amended) A method of establishing electrical contact between a semiconductor substrate and a semiconductor device, comprising:
providing a substrate with an overlying insulating layer;
etching a hole through the insulating layer to the substrate;
introducing doped polycrystalline silicon into the hole;
introducing at least one titanium layer within the hole over the doped polycrystalline silicon;
introducing at least one non-titanium layer over the at least one titanium layer and within the hole;
providing an oxidation barrier over the non-titanium layer and within the hole;
siliciding the titanium layer;
nitridizing the non-titanium layer by exposing the non-titanium layer ~~to a~~ to an N_2/NH_3 ambient at a temperature of about $360^{\circ}C$; and
forming the semiconductor device over the oxidation barrier.

28.-72. (Cancelled)

73. (Currently amended) The method of claim 27, further comprising exposing the non-titanium layer ~~to a~~ to an N_2/NH_3 ambient under a pressure of approximately 4.5 torr.

74. (Currently amended) The method of claim 27, wherein exposing the non-titanium layer ~~to a~~ to an N_2/NH_3 ambient comprises exposing a tungsten layer ~~to a~~ to an N_2/NH_3 ambient.

75. (Previously presented) The method of claim 27, wherein introducing doped polycrystalline silicon into the hole comprises filling the hole with doped polycrystalline silicon and subsequently removing a portion of the doped polycrystalline silicon from the hole.

76. (Previously presented) The method of claim 75, wherein removing a portion of the doped polycrystalline silicon comprises etching the doped polycrystalline silicon.

77. (Previously presented) The method of claim 27, further comprising siliciding the titanium layer prior to introducing at least one non-titanium layer over the at least one titanium layer and within the hole.

78. (Previously presented) The method of claim 27, wherein introducing at least one titanium layer comprises selectively depositing the titanium layer on the polycrystalline silicon through chemical vapor deposition.

79. (Currently amended) The method of claim 27, wherein siliciding the titanium layer comprises exposing the semiconductor substrate to $TiCl_4$ with a reactive gas and a carrier gas at a temperature about ~~400°C~~ 400°C in a reaction chamber under a pressure of approximately 0.2 to 2 torr while ~~an rf~~ an RF voltage is applied to the reaction chamber.

80. (Previously presented) The method of claim 27, wherein the oxidation barrier is selected from the group consisting of rhenium, iridium, osmium, palladium, platinum, and rhodium.

81. (Currently amended) A method of establishing electrical contact between a semiconductor substrate and a semiconductor device, comprising:
providing a substrate with an overlying insulating layer;
etching a hole through the insulating layer to the substrate;
introducing doped polycrystalline silicon into the hole;
introducing at least one titanium layer within the hole over the doped polycrystalline silicon;
introducing at least one non-titanium layer over the at least one titanium layer and within the hole;
siliciding the titanium layer by exposing the semiconductor substrate to TiCl_4 with a reactive gas and a carrier gas at a temperature about ~~400°C~~ 400°C in a reaction chamber under a pressure of approximately 0.2 to 2 torr while ~~an rf~~ an RF voltage is applied to the reaction chamber;
nitridizing the non-titanium layer by exposing the non-titanium layer ~~to a~~ to an N_2/NH_3 ambient at a temperature of about 360°C; and
forming the semiconductor device over the non-titanium layer.

82. (Currently amended) The method of claim 81, further comprising exposing the non-titanium layer ~~to a~~ to an N_2/NH_3 ambient under a pressure of approximately 4.5 torr.

83. (Currently amended) The method of claim 81, wherein exposing the non-titanium layer ~~to a~~ to an N_2/NH_3 ambient comprises exposing a tungsten layer ~~to a~~ to an N_2/NH_3 ambient.

84. (Previously presented) The method of claim 81, wherein introducing doped polycrystalline silicon into the hole comprises filling the hole with doped polycrystalline silicon and subsequently removing a portion of the doped polycrystalline silicon from the hole.

85. (Previously presented) The method of claim 84, wherein removing a portion of the doped polycrystalline silicon comprises etching the doped polycrystalline silicon.

86. (Previously presented) The method of claim 81, further comprising siliciding the titanium layer prior to introducing at least one non-titanium layer over the at least one titanium layer and within the hole.

87. (Previously presented) The method of claim 81, wherein introducing at least one titanium layer comprises selectively depositing the titanium layer on the polycrystalline silicon through chemical vapor deposition.